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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,867	05/03/2004	Peng Chum Loh	4890P001	9143

7590 04/05/2005

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EXAMINER	
LIN, ING HOUR	

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/890,867	LOH, PENG CHUM	
	Examiner	Art Unit	
	Ing-Hour Lin	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *6-12 and 16-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,13-15 and 27-30* is/are rejected.

7)☒ Claim(s) *6-12 and 16-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/0*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification is objected to because there is a lack of section headings:

CROSS-REFERENCE TO RELATED APPLICATIONS;
BACKGROUND OF THE INVENTION;
BRIEF SUMMARY OF THE INVENTION; BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS; and DETAILED DESCRIPTION OF THE INVENTION.

Correction is required.

Claim Objections

2. Claims 6-12 and 16-26 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, these claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 27-28, there is a lack of steps and elements in the claimed method and apparatus.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Volpe or Kidowaki et al in view of Nihei et al.

Either Volpe (col. 2, lines 8+) or Kidowaki et al (col. 5, lines 37+) teach the claimed method and apparatus for producing a metal or alloy casting, comprising the use of arc of an electrode (tungsten electrode 28 in Volpe's Fig. 1 and electrode 13 in Fig. 3 of Kidowaki et al) for melting the metal in a crucible under an inert atmosphere and injecting the molten metal into a mold lying under the crucible.

Either Volpe or Kidowaki et al fail to teach the use of control means of high frequency pulse (alternating) current and current polarity switching means for the electrode. However, Nihei et al (col. 2, lines 33+) teach the use of control means of high frequency pulse (alternating) current (control unit 1) and current polarity switching means (converting portion 2 of DC pulse in Fig. 1) for the electrode for the purpose of agitating or stirring and cleaning the molten metal (col. 3, lines 9+) in a melt pool and removing the oxide films on the melt pool when the electrode is shifted to a positive polarity and served to have the function of positive ions bombardment (col. 5, lines 7+). It would have been obvious to one having ordinary skill in

the art to provide either Volpe or Kidowaki et al the use of control means of high frequency pulse (alternating) current (control unit 1) and current polarity switching means (converting portion 2 in Fig. 1) as taught by Nihei et al in order to effectively homogenize molten metal and remove oxide film in the crucible before the clean molten metal is injected into a casting mold.

7. Claims 4-5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Volpe or Kidowaki et al in view of Nihei et al and further in view of Cameron et al.

Either Volpe or Kidowaki et al in view of Nihei et al fail to teach the use of mechanism for oscillating the electrode. However, Cameron et al (col. 1, lines 69+) teach the use of driving mechanism 16, 26 for oscillating the electrode for the purpose of agitating or stirring the molten metal in a melt pool. It would have been obvious to one having ordinary skill in the art to provide either Volpe or Kidowaki et al in view of Nihei et al the use of driving mechanism 16, 26 for oscillating the electrode as taught by Cameron et al in order to effectively homogenize molten metal in the crucible before the clean molten metal is injected into a casting mold.

8. Claims 27 and 28 insofar as definite are rejected under 35 U.S.C. 103(a) as being unpatentable over either Volpe or Kidowaki et al in view of Nihei et al and further in view of either Daniel et al or Ogino et al.

Either Volpe or Kidowaki et al in view of Nihei et al fail to teach the use of graphite crucible or a regulating valve. However, Daniel et al (col. 5, lines 66+) teach the use of graphite crucible sections 14, 15 for the purpose of melting and producing clean molten metal. Ogino et

al (col. 8, lines 30+) teach the use of a regulating valve (actuator 35) for the purpose of controlling the flow rate of the molten metal injected from the crucible into the mold. It would have been obvious to one having ordinary skill in the art to provide either Volpe or Kidowaki et al in view of Nihei et al the use of graphite crucible as taught by Daniel et al and the use of a regulating valve as taught by Ogino et al in order to effectively homogenize clean molten metal in the crucible and control the flow rate of the clean molten metal to be injected into a casting mold.

9. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Volpe or Kidowaki et al in view of Cameron et al.

Either Volpe or Kidowaki et al fail to teach the use of oscillating the electrode. However, Cameron et al (col. 1, lines 69+) teach the use of oscillating the electrode for the purpose of agitating or stirring the molten metal in a melt pool. It would have been obvious to one having ordinary skill in the art to provide either Volpe or Kidowaki et al the use of oscillating the electrode as taught by Cameron et al in order to effectively homogenize molten metal in the crucible before the clean molten metal is injected into a casting mold.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I.-H. Lin

3-30-05

Kevin Kerns 4/3/05

Primary Examiner - AU 1725